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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,083	09/23/2003	Eric Picollet	STMI07-01185	1866

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EXAMINER

DOUGHERTY, ANTHONY T

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/669,083

Applicant(s)

PICOLLET ET AL.

Examiner

Anthony T. Dougherty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-16 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/19/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION**PRIOR ART**

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,774,448 to Lindemann et al. because it teaches a method of measuring the capacitance of integrated capacitors with overlap using thickness (d), free space permittivity (ϵ_o), relative permittivity (ϵ_r) of the passivation layer and the total overlap area (A) (see FIGS. 10 and 11 & column 7 line 34-44) as follows:

$$C = \frac{\epsilon_o \epsilon_r A}{d}$$

However, Lindemann et al. fails to disclose estimating the capacitance by adding the equation above with a second term $C_1 \cdot 2(W+L)$ with:

$$C_1 = \frac{\epsilon_o}{\pi} \cdot K \cdot \ln(a)$$

ϵ_o is the dielectric permittivity of free space,

$$K = \frac{\epsilon_{ox} \cdot \epsilon_E}{\epsilon_{ox} - \left(\frac{(\epsilon_E - \epsilon_{ox})^2}{(\epsilon_E + \epsilon_{ox})} \cdot \frac{t_{ox} s t}{t_{ox}} \right)}$$

$$a = -1 + 2k^2 + 2k\sqrt{k^2 - 1} \quad \text{with } k = 1 + \frac{t_{M1}}{t_{ox}}$$

Allowable Subject Matter

2. Claims 1-16 allowed.

3. The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claims 1-16 is the inclusion of the method step of estimating a capacitance by adding the equation

$$C = \frac{\epsilon_o \epsilon_r A}{d} \quad \text{with a second term } C_1 \cdot 2(W+L) \quad \text{with:}$$

$$C_1 = \frac{\epsilon_o}{\pi} \cdot K \cdot \ln(a)$$

ϵ_o is the dielectric permittivity of free space,

$$K = \frac{\epsilon_{ox} \cdot \epsilon_E}{\epsilon_{ox} - \left(\frac{(\epsilon_E - \epsilon_{ox})^2}{(\epsilon_E + \epsilon_{ox})} \cdot \frac{t_{oxSt}}{t_{ox}} \right)}$$

$$a = -1 + 2k^2 + 2k\sqrt{k^2 - 1} \quad \text{with } k = 1 + \frac{t_{M1}}{t_{ox}}. \quad \text{It is this step found in each of the claims, as it is}$$

claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T. Dougherty whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday through Friday from 8 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


atd


John Barlow
Supervisory Patent Examiner
Technology Center 2800